

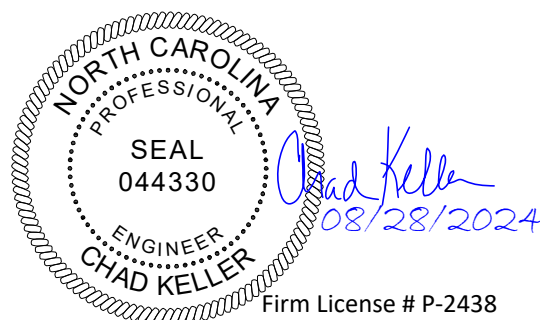
Date: August 28, 2024
Project: Toney Residence
Address: 4165 Darroch Rd
Lillington, NC 27546

Helical Pier Foundation Support System Analysis

This report is prepared for Southeast Foundation Repair (contractor) by FDN Engineering (engineer). Helical piers are proposed for installation at the above referenced project. The foundation support system is intended to stabilize and potentially lift the existing foundation structure – reducing pressure on existing soils. Load requirements for the helical piers were calculated at areas identified by the contractor. Engineer performed design for this project - see page 2 for engineering notes and results. See page 3 for details for the helical pier foundation supports. See page 4 for a layout of the supports proposed by contractor on a footprint of the structure.

To the best of my professional knowledge and belief, the design of the helical pier support system meets the structural requirements of the 2018 North Carolina State Building Code to the extent that it applies to our scope of work.

Upon completion of the foundation support system, the contractor shall supply engineer a log of the installed locations, depth, and final torque of the helical piers. Engineer will evaluate the log and prepare a letter of completion for closeout, if necessary.

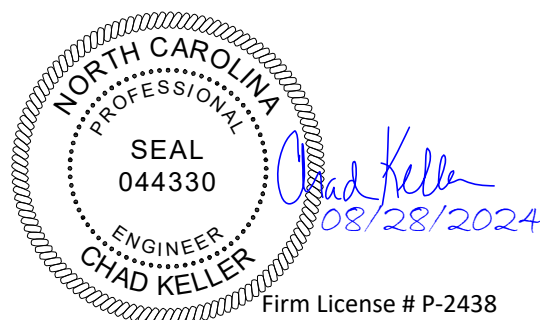


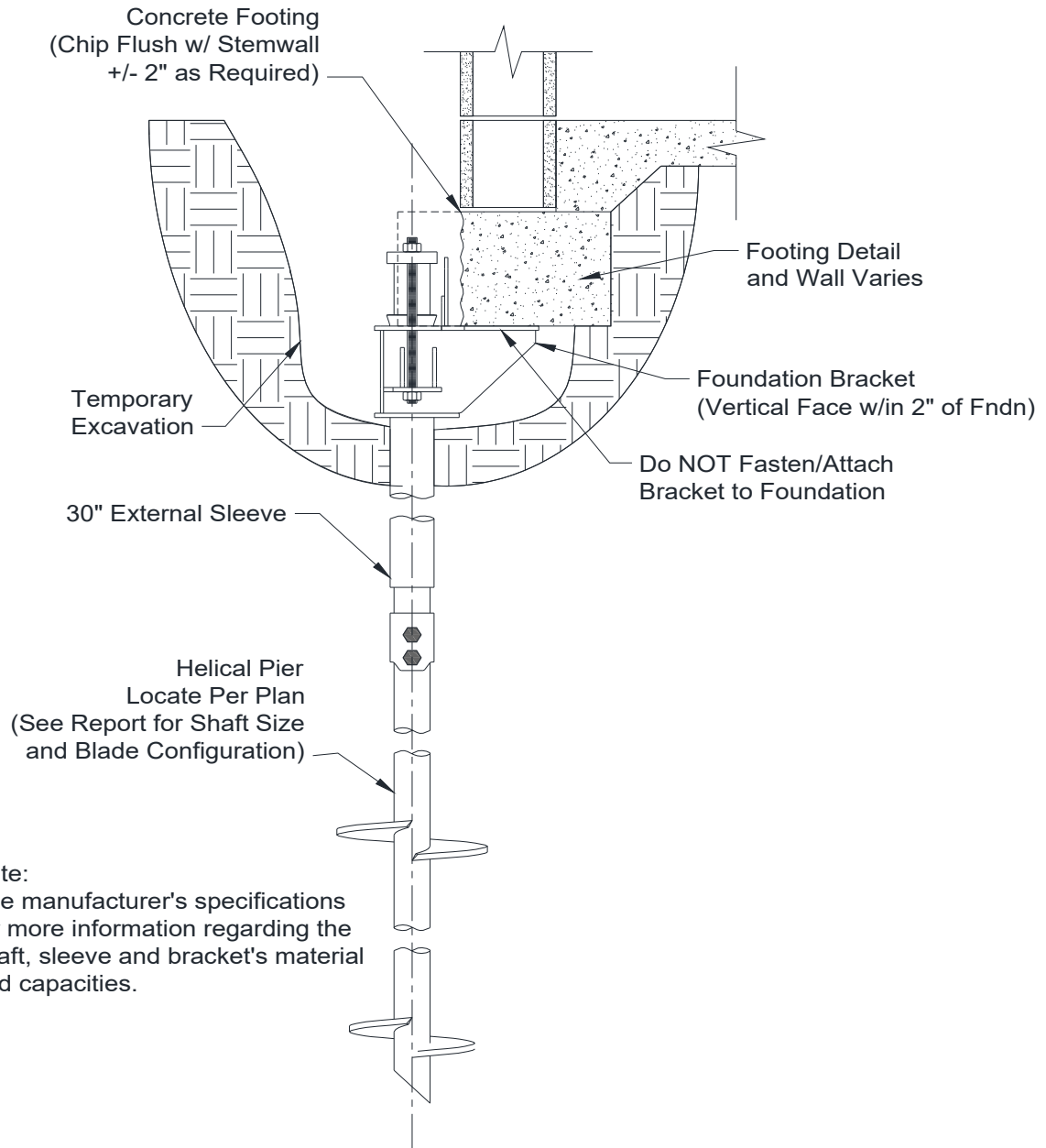
Helical Pier Project Notes (contractor to inform engineer if assumptions are inaccurate):

1. Structure is one-story, residential with wood-framed floor & brick-veneer walls.
2. Contractor will install helical piers, brackets, and all related components per the support manufacturer's current installation instructions and technical manual, and according to the latest ICC-ES AC358 & ESR-3074.
3. Helical piers shall have a center-to-center spacing at the helix depth of at least three (3) times the diameter of the largest helix plate.
4. Pier shall not be installed in recently backfilled sites, in bedrock soils, or where there is possible sinkhole activity. Notify engineer if foundation is cracked between piers.
5. The pier was designed as plain steel corroded with capacities assuming a 50-year scheduled sacrificial loss in thickness per ICC-ES AC406. Contractor may galvanize the system for added corrosion protection.
6. Only local effects have been checked on existing structural members (e.g., concrete bearing at pier bracket). The integrity of the existing supported structure is outside of our scope of work.
7. Where voids are created below the slab during lifting, it is recommended to fill with PolyLevel. Use compacted soil around the footing.

Helical Pier Analysis and Results:

8. All design loads are based on guidance from the applicable building code.
9. Helical piers are designed to support axial compression load only.
10. Maximum, worst-case, total load on a helical pier is **16,100 lbs** (allowable stress combinations).
11. We recommend installation of piers with a 2-7/8" diameter shaft (HP287) with 8" and 10" diameter (minimum) helix plates.
12. Minimum helical pier tip depth is 8 ft.
13. An installation torque of **3,600 ft-lbs** should be applied to achieve an allowable capacity greater than the total load.
14. Do not place pier directly under door/window (w/in 24" from footing). Contact engineer if condition exists.
15. Helical pier spacing along the foundation shall not exceed 8'-0" O.C. and 2-ft from a corner, typ.
16. A factor of safety of 2.0 is used to calculate the allowable soil bearing capacity.





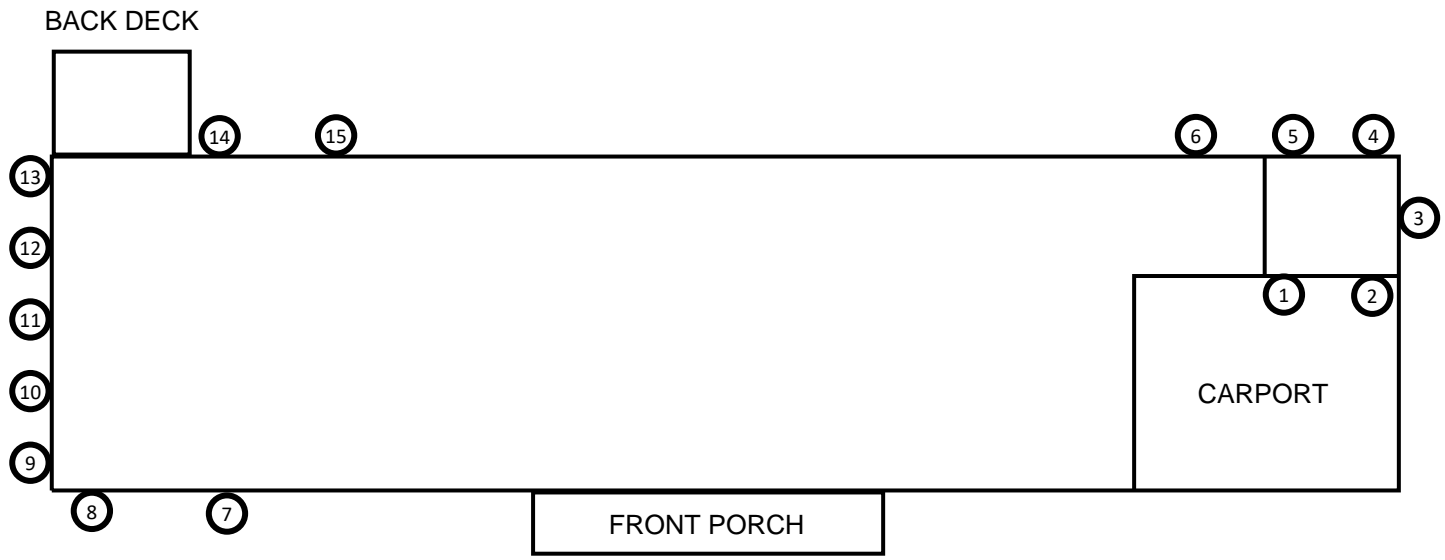
HELICAL PIER TO FOOTING DETAIL

LEGEND:

Ⓝ Indicates Helical Pier and Mark Number

Helical Pier Notes:

1. Residential construction, one-story.
2. Layout of (15) piers, Model HP287 for fndn support - 8'-0" min depth.
3. Installation torque of **3,600 ft-lbs.**
4. Pier max spacing is 8'-0", UNO. Start 2' from corners.
5. Spacing may vary based on field conditions. +/- 1 ft from noted spacing.
6. Install per helical pier manufacturer's instructions and tech. specifications.
7. Notify engineer if design assumptions are discovered inaccurate.



FOOTPRINT OF RESIDENCE

DRAWING NOT TO SCALE

Project:

Toney Residence
4165 Darroch Rd
Lillington, NC 27546

FDN Engineering, PLLC

2412 N 179th St.
Omaha, NE 68116
(402) 739-9642



Chad Keller
08/28/2024

Firm License # P-2438